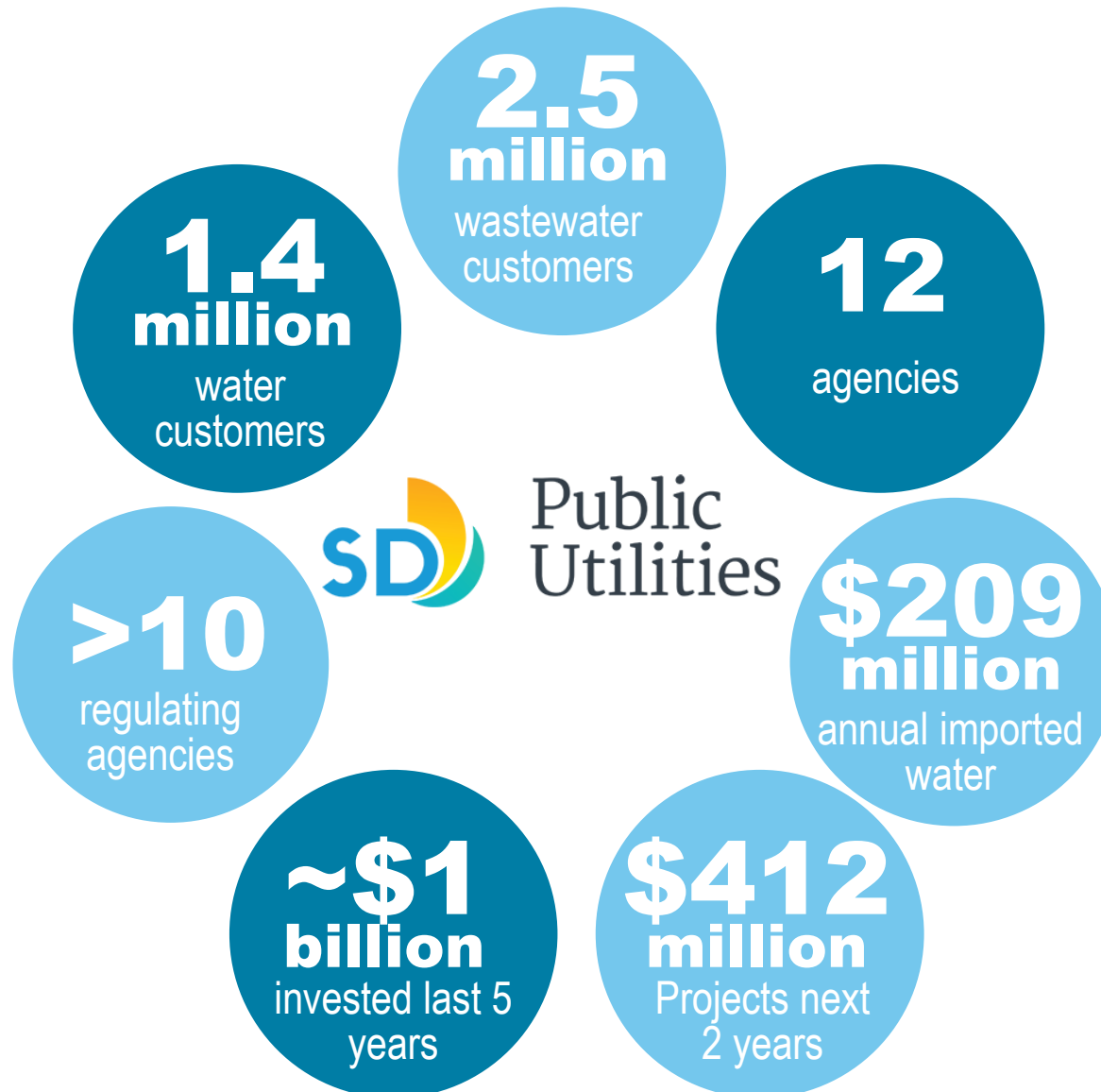




Pure Water San Diego

Program

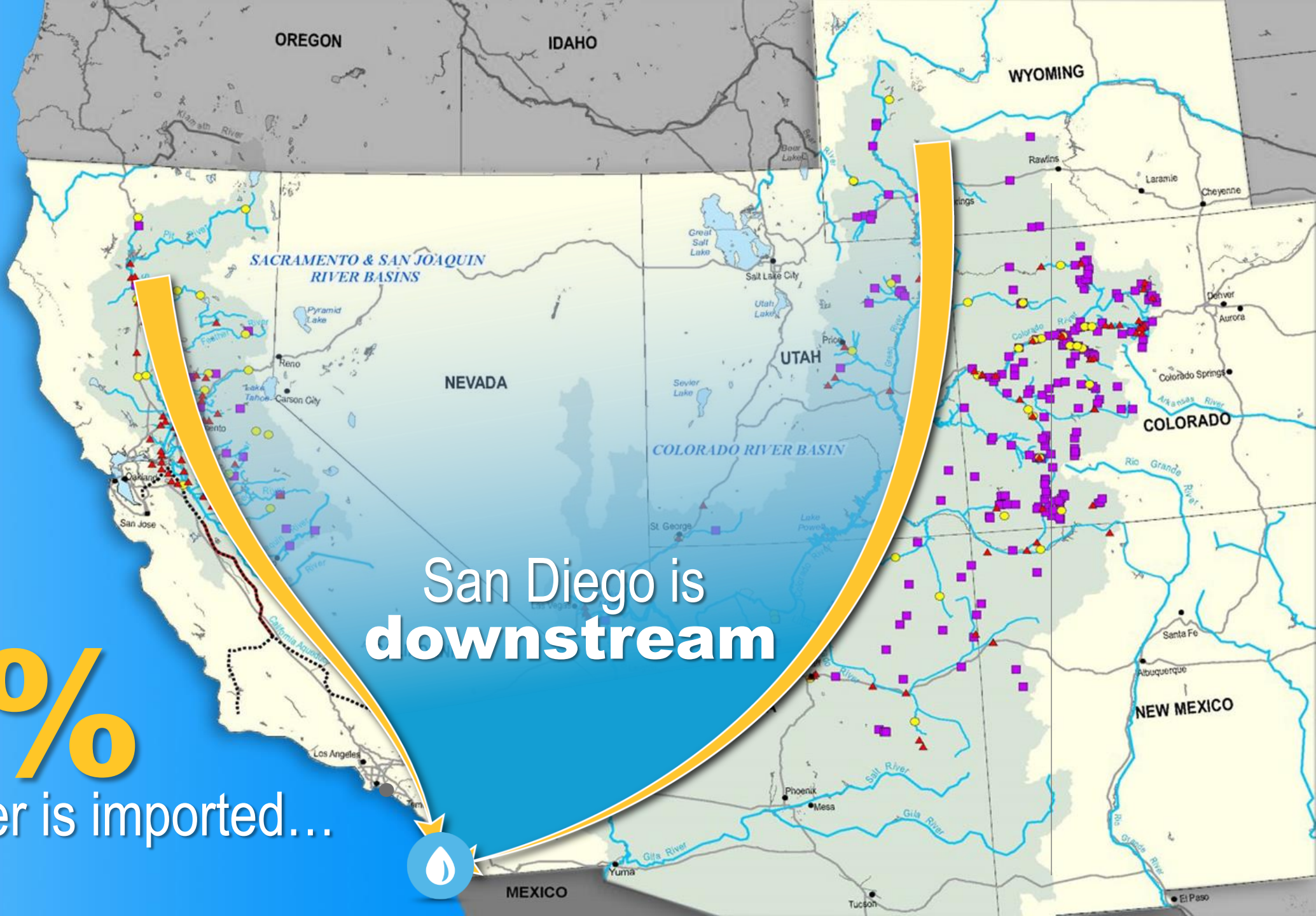
San Diego PUD: The Numbers



85%

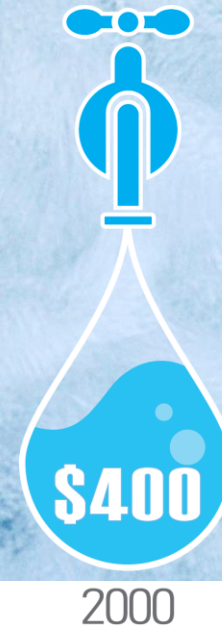
of our water is imported...

San Diego is
downstream



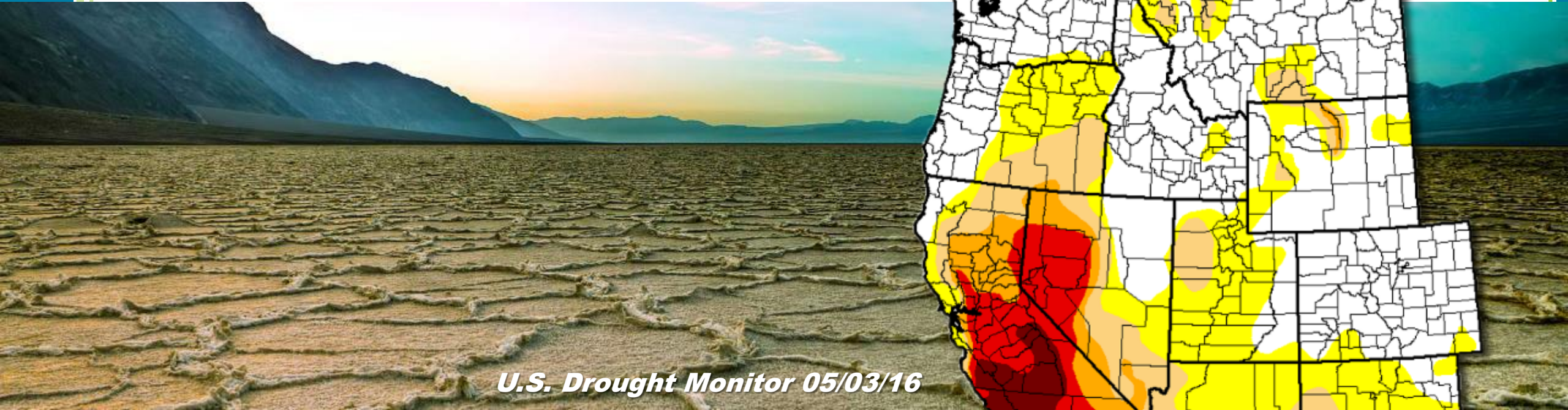
We Face Numerous Water Challenges

Imported water cost per acre-foot



- Limited local & imported supplies
- Population growth
- Bay Delta constraints
- Natural disaster risk
- Rising imported water costs
- Recurring drought

We are in a drought



U.S. Drought Monitor 05/03/16

Southern California remains firmly locked in a fifth year of drought.

– San Diego Union Tribune, 05/09/16

What is Being Done?

Multi-faceted Approach:

- Conservation
- Desalination
- Groundwater Development
- Recycled Water
- Pure Water Program



What is **Pure Water** San Diego?



Safe



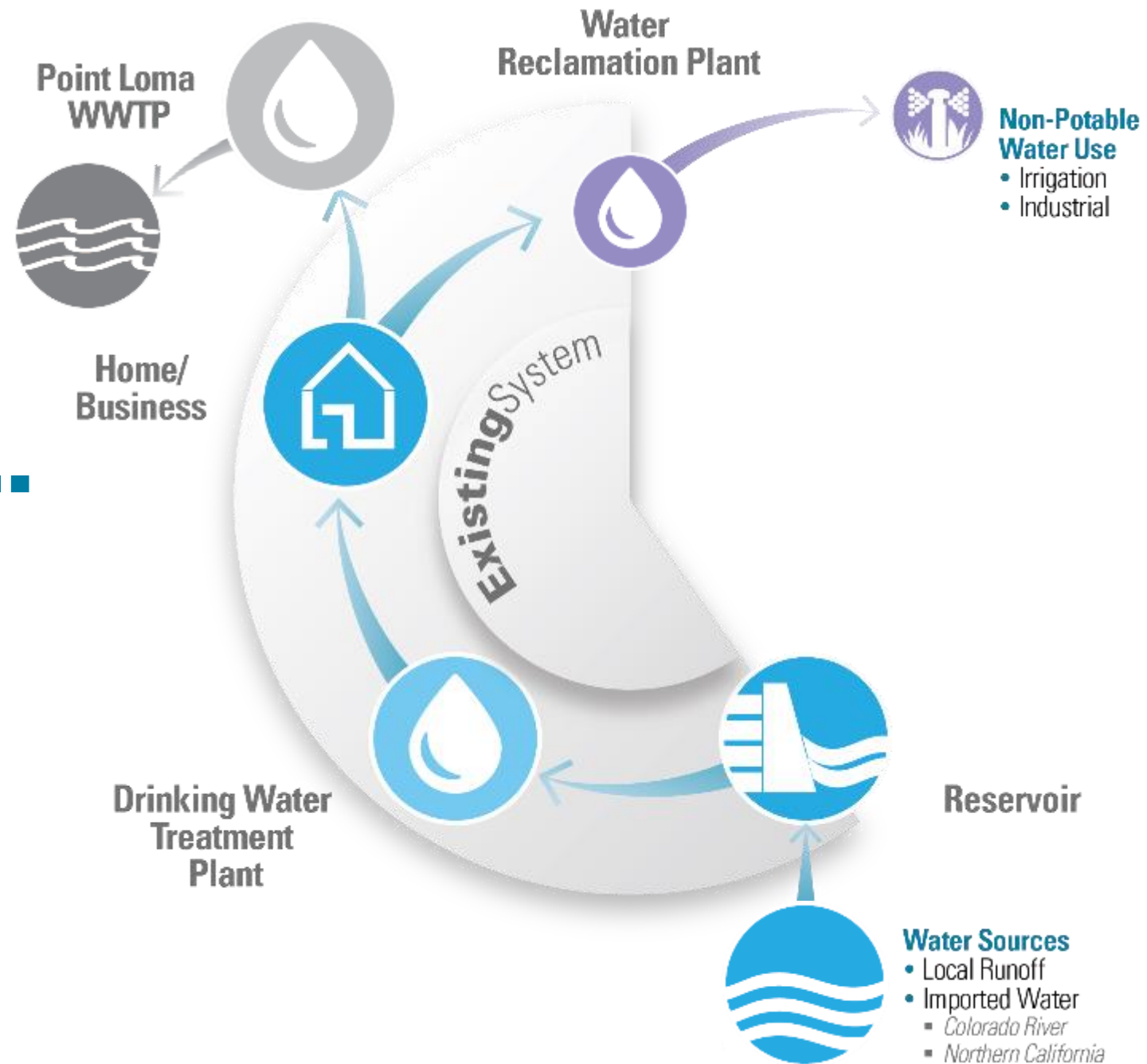
Reliable



Cost-effective

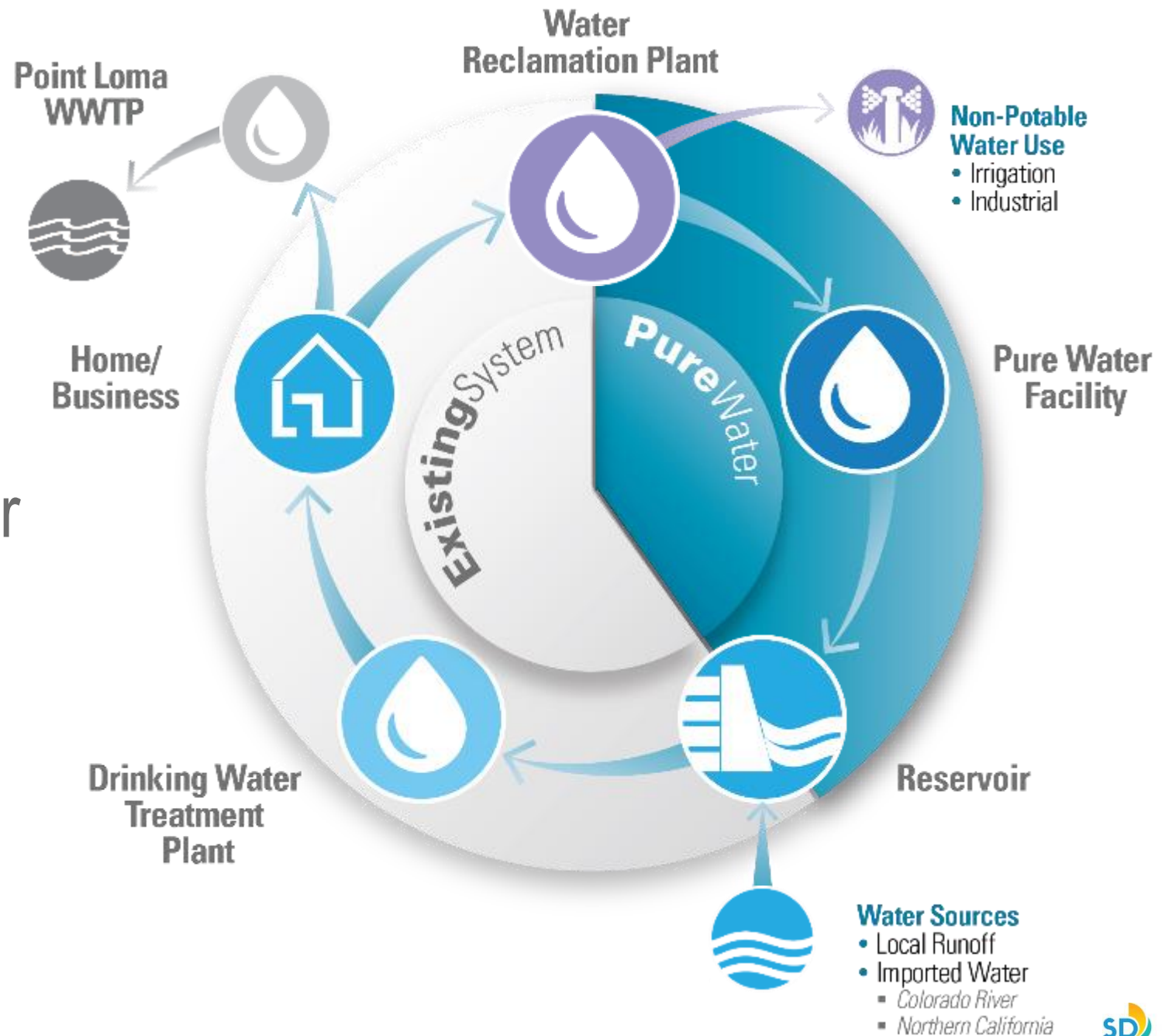
Existing System...

Primarily a
Single-Use
System

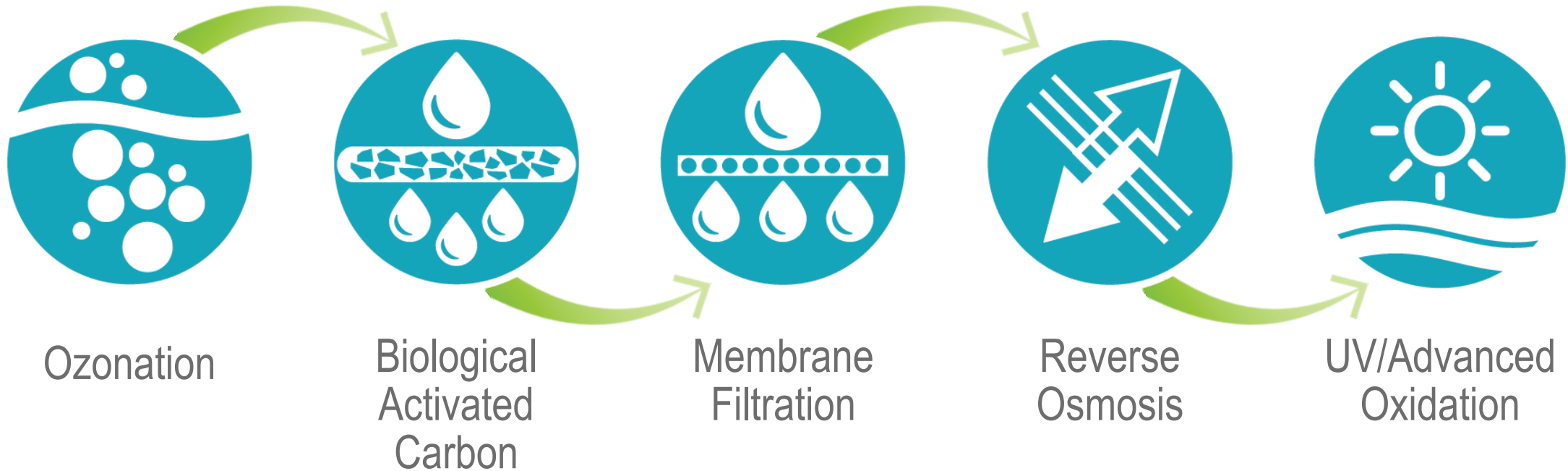


Pure Water...

Completes Our Water Cycle



Pure Water Uses Proven Technology

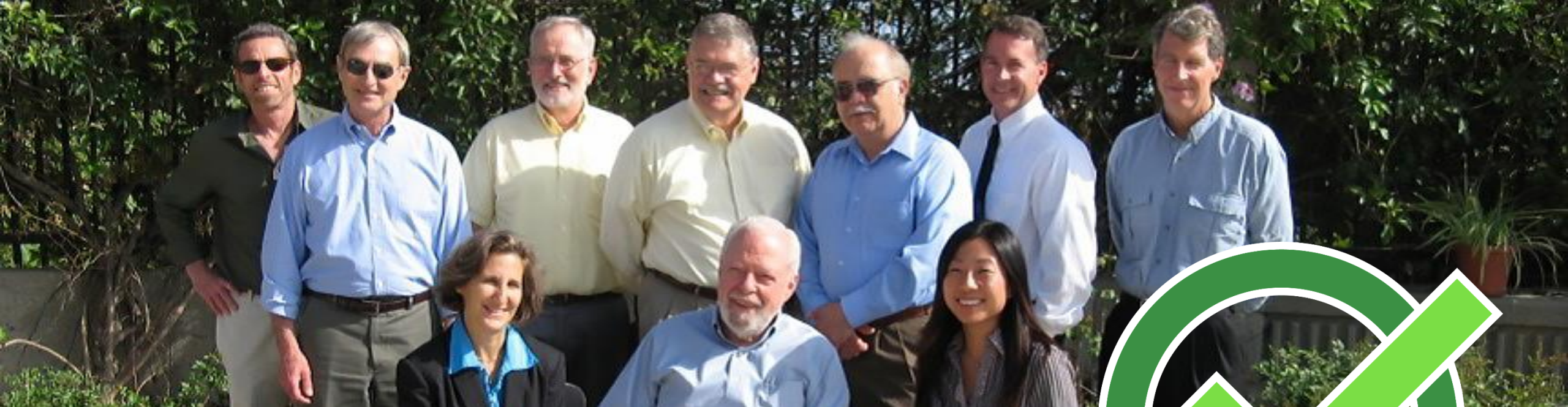


Pure Water Runs a Successful Demonstration Plant



- 28,000 lab tests: **Met all standards**
- Water quality: **Exceptional**
- Energy use: **Less than imported water**

Pure Water **Independent Advisory Panel**



Provides **Stamp of Approval**

- **Local & National Experts**
- **9 PhDs focused in water quality, & public health**

Pure Water Treatment Processes

A Long Track Record of Success



Orange County, California

37
years

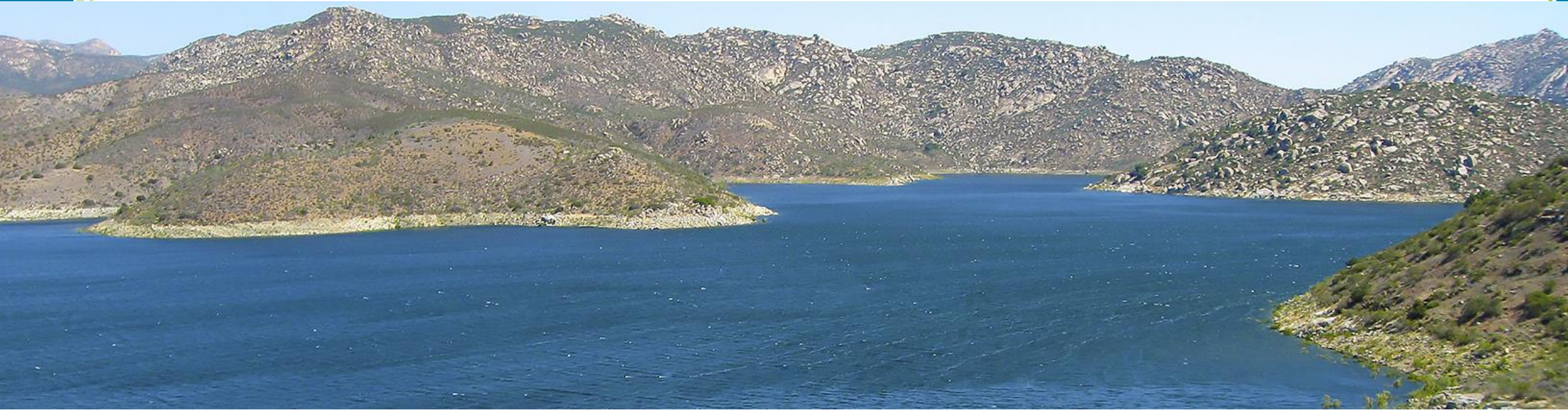


Fairfax, Virginia

30
years

Meeting
100% of Water Quality Standards

Pure Water Reservoir Augmentation Concept



Involved **Close Coordination** with **Regulators**

- **APPROVED** by California Division of Drinking Water (2012)
- **SUPPORTED** by the Regional Water Board (2013)

Program Goals

Phase 1	30 mgd by 2021	North City
	Output	Location
Phase 2	Additional 53 mgd by 2035	Central Area South Bay (as needed)

Total: 83 mgd

Pure Water
will produce
1/3
of your water
locally

Phase 1

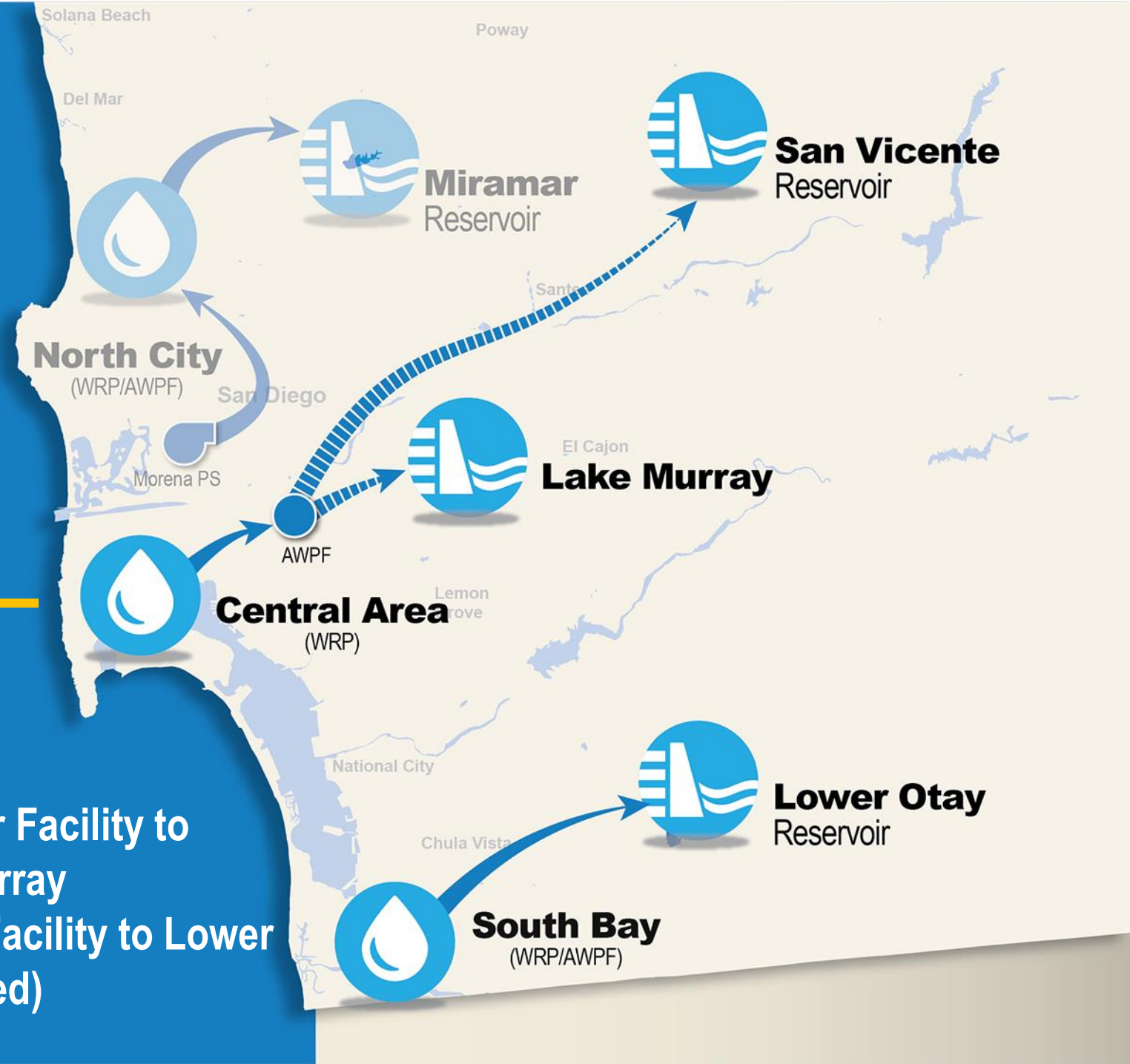
- 2021 Completion
- 30 mgd
- North City Pure Water Facility to Miramar



Pure Water
will produce
1/3
of your water
locally

Phase 2

- 2035 Completion
- 53 mgd
- Central Area Pure Water Facility to San Vicente or Lake Murray
- South Bay Pure Water Facility to Lower Otay Reservoir (if needed)



Who Supports **Pure Water?**



What Can I Do?



www.PureWaterSD.org



Pure Water San Diego



PureWaterSD



@PureWaterSD

Join our **mailing list** and sign a **support card**

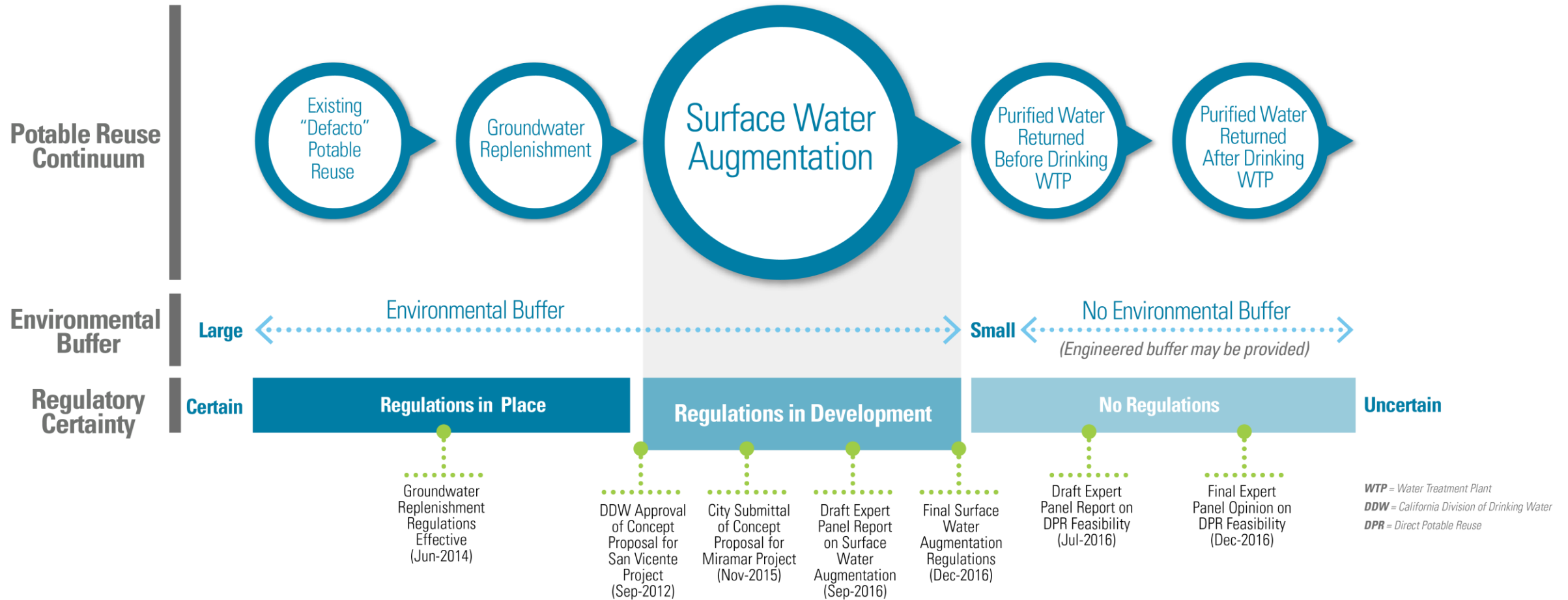


Back up Slides

Potable Reuse Terminology

Finished water
Groundwater Replenishment
DPR light
Water Reclamation
Direct Potable Reuse
Purified Water
Water Reuse
Drinking Water
Full Advanced Treatment
Indirect Potable Reuse
DPR
Potable Reuse
Recycled Water
Reclaimed Water
Direct – Direct Potable Reuse
Surface Water Augmentation
Tap-to-Tap
Potable Water

Regulatory Permitting



Gradual Loss of Environmental Buffer

- Means to compensate for loss of some or all of the environmental buffer could include:
 - *More robust multiple treatment barriers*
 - *Enhanced monitoring for CECs or surrogates*
 - *Real-time or near real-time monitoring capability*
 - *Short-term storage of product water to provide time for monitoring results prior to use as a potable supply*
 - *Alternative water supply source or means to quickly correct failure*

Modified Permits

- Point Loma Wastewater Treatment Plant currently treats wastewater to advanced primary levels under a modified permit
- Modified Permit renewal application submitted to EPA in January 2015
 - *Includes commitment to Pure Water and seeks secondary equivalency*



Seeking Secondary Equivalency

- Modified permit conditions:
 - *No negative impacts on ocean environment*
 - *Environmental community support*
 - *Reduced TSS limits*
 - *Pt. Loma remains advanced primary plant*
 - *Creates locally controlled, drought-proof source of water*



Award Winning Public Outreach

Q2
2016

412

Community
Presentations



More than
2,800
Support Pledges
from San Diegans

Q2
2016



Q2
2016



128
Community Events

6 in
Q2 2016

284
Stakeholder
Interviews



Q2
2016

More than **10,000** people have toured
the Pure Water Facility.

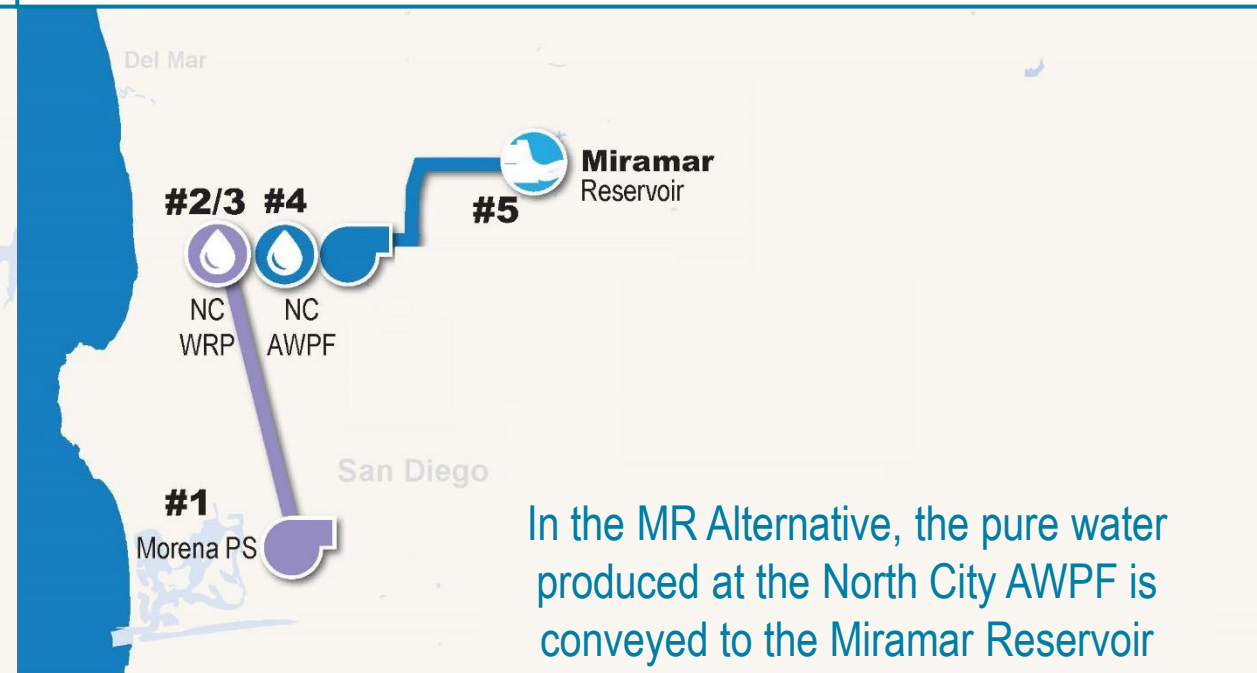


SVR vs. MR Alternative

San Vicente Reservoir (SVR) Alternative



Miramar Reservoir (MR) Alternative



What Stays the Same?

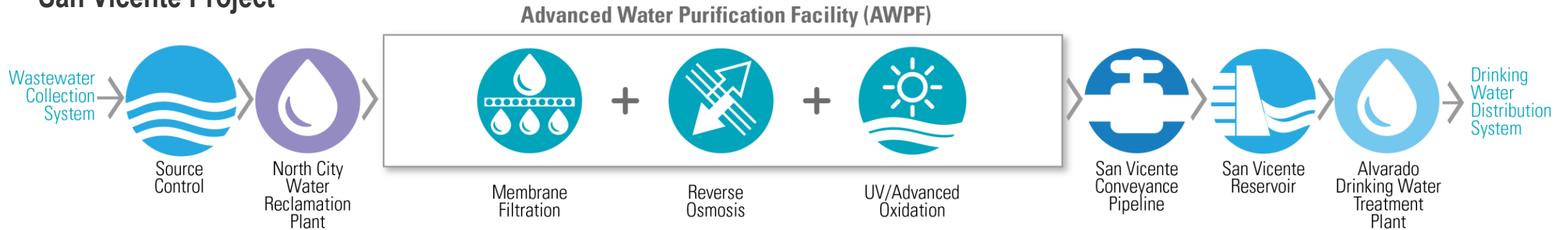
- #1** Morena Pump Station, WW Force Main and Brine Conveyance
- #2** North City Cogeneration Facilities
- #3** North City WRP Expansion

What Changes?

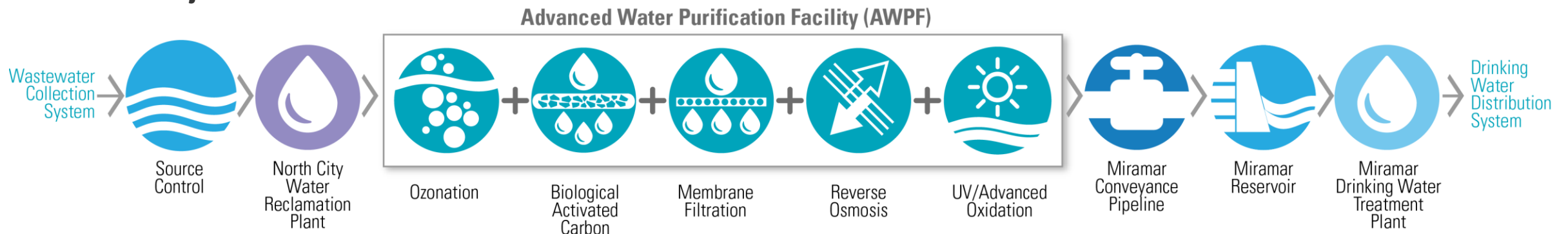
- #4** North City AWP Pre-Design (MR/SVR)
- #5** Miramar PS/PL Pre-Design
- #6** San Vicente Pipeline and Pump Stations, San Vicente Tunnel

Equal Public Health Protection

San Vicente Project



Miramar Project



Critical Control Point Monitoring

Critical Control Point	Critical Limit Parameter	Monitoring Frequency	Alert Limit	Critical Limit
MF/UF	Pressure Decay	1 per day	Above baseline that approaches critical limit	0.4 psi / 5 min. based on 4 log removal <i>Cryptosporidium</i>
RO	TOC, Conductivity	Continuous	% change concentration in combined RO permeate	Online permeate conductivity = 150 μ s/cm. Online permeate TOC = 100 ppb
UV/AOP	Reactor Power Level	Continuous	100% (2 to 7 lamp failures or 1 to 3 ballast failures)	0% (8 or more lamp failures or 4 ballast failures)
UV/AOP	H ₂ O ₂ dose rate Continuous flow confirmation	1 per day Continuous flow confirmation	minimum dose (~22 ml/min.) to provide 3 mg/L peroxide	0 ml/min. indicating pump failure or loss of flow confirmation

Additional Research

- Using grant funds to continue testing and monitoring
- Researching additional treatment barriers



Ozonation



Biological Activated Carbon (BAC) Filters